DETAILED ACTION

Examiner acknowledges receipt of 6/23/08 amendment to the claims which was entered into the file. Examiner acknowledges receipt of the corrected English translation which was entered into the file. Claims 1-10 are currently pending.

Claim Rejections - 35 USC § 103

Claims 1-4, 6, 7, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmori et al (US 2002/0150531).

Claims 1-4, 6, 7: Ohmori teaches a process for coating a substrate, wherein a suspension of crystalline oxide particles (see, for example $Sr(TiO)_3$, $Ba(TiO)_3$, perovskite cubic crystalline structure, abstract, [0045]) having a mean particle size of from 10-1000 nm (abstract), is applied to a substrate by coating (see, for example, dip coating, [0047]), the suspending medium (see, for example, ethyl alcohol, [0046]) is evaporated (drying step, [0047]) and the coating on the substrate is sintered (see for example firing at 500^{o}C, [0048]).

Ohmori does not explicitly teach wherein the mean particle size is from 0.5 to 9.9 nm, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a mean particles size 0.5 to 9.9 nm, 0.6-9nm, or 1 to 8 nm, since a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have

expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985).

Claims 9 and 10: Ohmori further teaches wherein said suspension has a solids content of 5 wt % (see, for example, [0046]).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmori as applied to claim 1 above, and further in view of Eisenbeiser (US 2002/0167981; hereafter Eisenbeiser).

Ohmori teaches the method of claim 1 wherein a sol is prepared and applied to a substrate (described above). Ohmori does not explicitly teach wherein the applying is by a process selected from the group consisting of spraying or spin-on. The examiner asserts that one of ordinary skill in the art would appreciate that spraying and spin-on processes are conventional and well known methods of applying sol coatings. Additionally, Eisenbeiser teaches a method of predictably forming a barium titanate layer by spin coating the titanate precursor material ([0064]). Because both Ohmori and Eisenbeiser teach method of applying titanate sol coatings to substrates, it would have been obvious to one of ordinary skill in the art at the time of invention to substitute one method for the other (incorporate an application via spin-on) to achieve the predictable result of forming a coating from a sol.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmori as applied to claim 1 above, and further in view of Sajoto et al (US patent 6,056,823; hereafter Sajoto.

Ohmori teaches the method of claim 1 wherein the sol is applied to a substrate (described above). Ohmori teaches wherein the sol is favorably deposited on a variety of substrates, but Ohmori does not explicitly teach wherein the substrate is a structured silicon wafer. Sajoto teaches a method of applying a metal oxide film to a structured silicon water, wherein the metal oxide is a titanate such as barium, strontium, titanate (BST) (see, for example, abstract, col 21 lines 10 - 50). Sajoto further teaches that the BST film on the silicon wafer functions as an integrated circuit capacitor useful in high capacity dynamic memory modules (see, for example, abstract). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a structured silicon wafer as the substrate in the method of Ohmori, as such a titanate coated wafer is recognized in the art to be useful in integrated circuit manufacture.

Response to Arguments

Applicant's arguments filed 6/23/08 have been fully considered but they are not persuasive.

The examiner asserts that D_2, as defined by Ohmori is an average particle size of secondary particles, and is a value which is measured with a particle size distribution analyzer ([0016]). If the value measured from a particle size distribution analyzer was a measurement of the mean particle size of secondary particles, then the overall mean

particle size must inherently be equal to or less than this average particle size measurement since secondary particles are comprised of primary particles:

a. In situations where secondary particles are comprised of more than one primary particle, the analyzer is only concerning itself with secondary particles, the smaller primary particles are not entering the calculation of average particle size, as the primary particles are smaller than the secondary particle size, including them into the calculation of average particle size would only reduce the average particle size.

b. In situations where the secondary particles are comprised of approximately one primary particle, the average particle size of secondary particles would be approximately equivalent to the total / overall average particle size.

Keeping the above in mind, Ohmori has further taught that average particle size of secondary particles (as reported in nm) is in a relationship to D1 of approximately 1 to 10. Where D1 is also reported in nm, and D1 is further defined as about 10 to about 100 nm. So the plugging in 10 to 100nm into the relationship D_2 / D1 = 1 to 10, would mean that D_2 (the average particle size of secondary particles, which as described above must be inherently equivalent or greater than the overall mean particle size) must be about 10 to about 1000 nm. The basis of the measurement of D1 is irrelevant, as the magnitude of D1 is used to yield the taught range of mean particle size / average particle size of secondary particles (D2).

The examiner maintains that the range 10 – 1000nm taught by Ohmori is not explicitly a mean particle size from 0.5 to 9.9 nm, but it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated a mean particles size 0.5 to 9.9 nm, since a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Further the examiner asserts that the motivation behind the teaching of Ohmori is to seek smaller particle sizes (see for example, [0003], [0007]), so one of ordinary skill in the art would be motivated to use smaller and smaller particle sizes.

The examiner does agree with the applicant's contention that Ohmori teaches away from a mean particle size from 0.5 to 9.9 nm. Ohmori does state "when the particle size is less than about 5nm, handling of the titanium oxide particles becomes difficult in the process of manufacturing thereof" ([0024]), but Ohmori does not explicitly teach that it should be avoided. Additionally, the "difficult" range is less than 5 nm, meaning that sizes between 5 nm -9.9 nm, which reside within the applicants claimed range, would not be "difficult".

As to the dependent claims, they remain rejected as no separate arguments are provided.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN H. EMPIE whose telephone number is (571)270-1886. The examiner can normally be reached on M-F, 7:00- 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. H. E./
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792